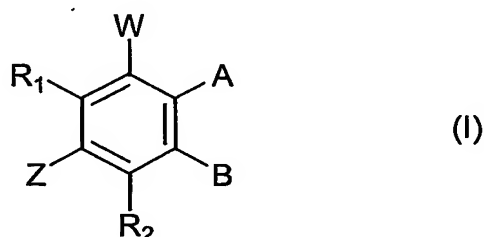


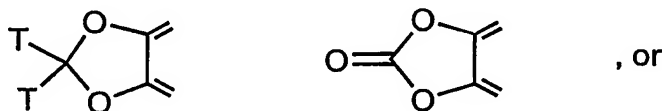
Claims

1. A method of increasing the sensitivity of cancer cells or a tumour to a
chemotherapeutic agent by contacting said cells or tumour with an isoflavonoid compound
5 of formula (I):

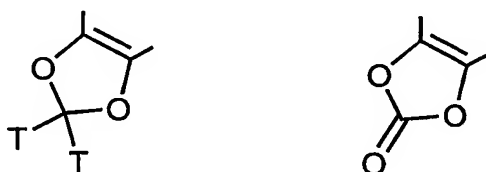


in which

- 10 R_1 , R_2 and Z are independently hydrogen, hydroxy, OR_9 , $OC(O)R_{10}$, $OS(O)R_{10}$, CHO , $C(O)R_{10}$, $COOH$, CO_2R_{10} , $CONR_3R_4$, alkyl, haloalkyl, arylalkyl, alkenyl, alkynyl, aryl, heteroaryl, alkylaryl, alkoxyaryl, thio, alkylthio, amino, alkylamino, dialkylamino, nitro or halo, or
- R_2 is as previously defined, and R_1 and Z taken together with the carbon atoms to which
15 they are attached form a five-membered ring selected from

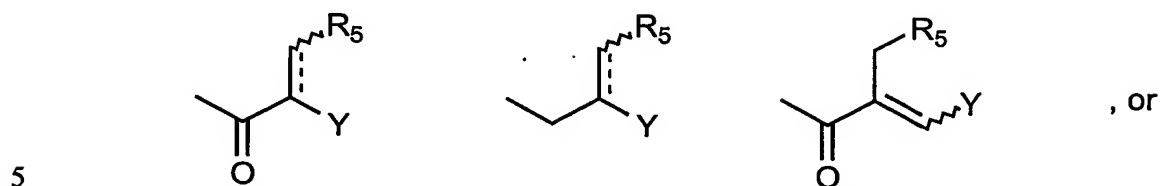


- R_1 is as previously defined, and R_2 and Z taken together with the carbon atoms to which
20 they are attached form a five-membered ring selected from

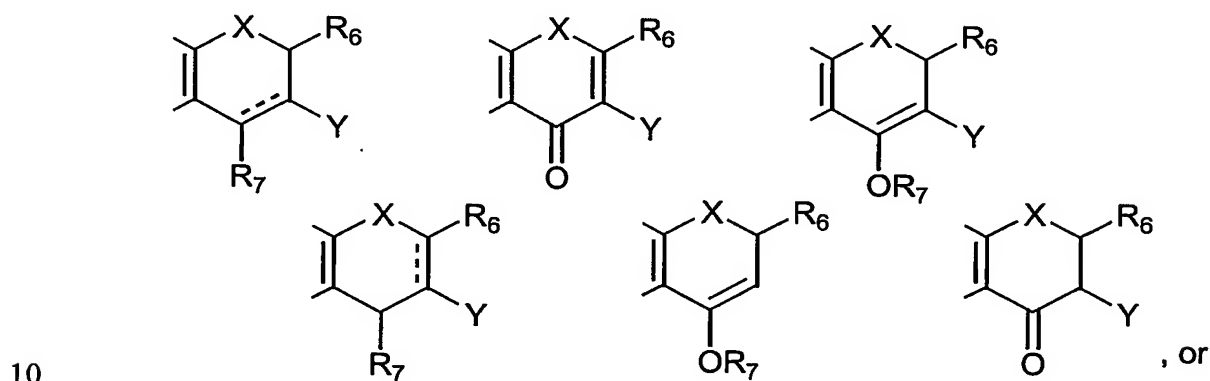


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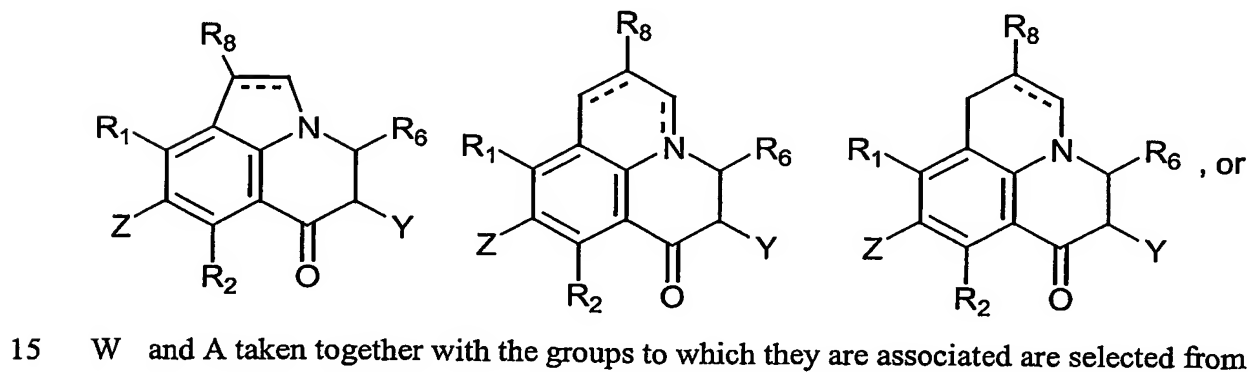
and

W is R₁, A is hydrogen, hydroxy, NR₃R₄ or thio, and B is selected from

W is R₁, and A and B taken together with the carbon atoms to which they are attached form a six-membered ring selected from

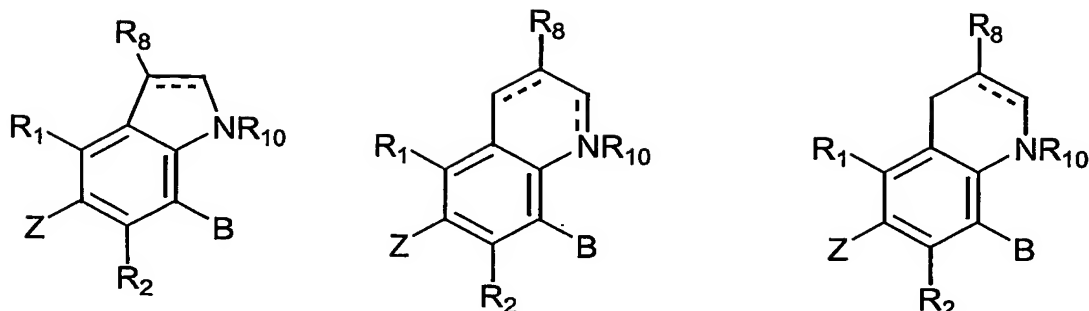


W, A and B taken together with the groups to which they are associated are selected from

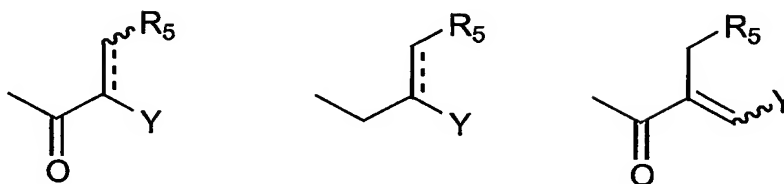


W and A taken together with the groups to which they are associated are selected from

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and B is selected from



5

wherein

R₃ is hydrogen, alkyl, arylalkyl, alkenyl, aryl, an amino acid, C(O)R₁₁ where R₁₁ is hydrogen, alkyl, aryl, arylalkyl or an amino acid, or CO₂R₁₂ where R₁₂ is hydrogen, alkyl, haloalkyl, aryl or arylalkyl,

10

R₄ is hydrogen, alkyl or aryl, or

R₃ and R₄ taken together with the nitrogen to which they are attached comprise pyrrolidinyl or piperidinyl,

R₅ is hydrogen, C(O)R₁₁ where R₁₁ is as previously defined, or CO₂R₁₂ where R₁₂ is as previously defined,

15

R₆ is hydrogen, hydroxy, alkyl, aryl, amino, thio, NR₃R₄, COR₁₁ where R₁₁ is as previously defined, CO₂R₁₂ where R₁₂ is as previously defined or CONR₃R₄,

R₇ is hydrogen, C(O)R₁₁ where R₁₁ is as previously defined, alkyl, haloalkyl, alkenyl, aryl, arylalkyl or Si(R₁₃)₃ where each R₁₃ is independently hydrogen, alkyl or aryl,

R₈ is hydrogen, hydroxy, alkoxy or alkyl,

20

R₉ is alkyl, haloalkyl, aryl, arylalkyl, C(O)R₁₁ where R₁₁ is as previously defined, or Si(R₁₃)₃ where R₁₃ is as previously defined,

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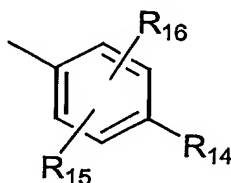
R₁₀ is hydrogen, alkyl, haloalkyl, amino, aryl, arylalkyl, an amino acid, alkylamino or dialkylamino,

the drawing "---" represents either a single bond or a double bond,

T is independently hydrogen, alkyl or aryl,

5 X is O, NR₄ or S, and

Y is



wherein

10 R₁₄, R₁₅ and R₁₆ are independently hydrogen, hydroxy, OR₉, OC(O)R₁₀, OS(O)R₁₀, CHO, C(O)R₁₀, COOH, CO₂R₁₀, CONR₃R₄, alkyl, haloalkyl, arylalkyl, alkenyl, alkynyl, aryl, heteroaryl, thio, alkylthio, amino, alkylamino, dialkylamino, nitro or halo, or any two of R₁₄, R₁₅ and R₁₆ are fused together to form a cyclic alkyl, aromatic or heteroaromatic structure,

15 and pharmaceutically acceptable salts thereof.

2. A method of claim 1, wherein the sensitivity of the cancer cells or tumour to the chemotherapeutic agent is restored.

20 3. A method of claim 1, wherein the compound of formula (I) is administered to a subject in need of such treatment

4. A combination therapy for the treatment, prophylaxis, amelioration, defence against and/or prevention of cell proliferation, cancer or a disease associated with oxidant stress comprising administering to a subject a therapeutically effective amount of a
25 compound of formula (I) as defined in claim 1 and a chemotherapeutic agent.

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5. A method for the treatment, prophylaxis, amelioration, defence against and/or prevention of cell proliferation, cancer or a disease associated with oxidant stress which method includes the step of administering a compound of formula (I) and a chemotherapeutic agent.

5

6. A method of claim 5, wherein the cancer is selected from breast cancer, prostatic cancer, testicular cancer, ovarian cancer, uterine cancer and colorectal cancer.

7. A method claim 6, wherein the cancer is selected from ovarian cancer, prostatic cancer and pancreatic cancer.

10

8. A method of claim 5, wherein the administration of the compound of formula (I) precedes the administration of the chemotherapeutic agent.

9. A method of claim 5, wherein the administration of the compound of formula (I) and the chemotherapeutic agent is simultaneous.

15

10. A method claim 5, wherein the combination therapy follows observed resistance by cancer cells or tumour to a chemotherapeutic agent.

20

11. A method of claim 5, wherein the compound of formula (I) is an isoflav-3-ene of general formula (VIa).

12. A method of claim 11, wherein the compound is dehydroequol.

25

13. A method of claim 5, wherein the chemotherapeutic agent is cisplatin, paclitaxel or carboplatin.

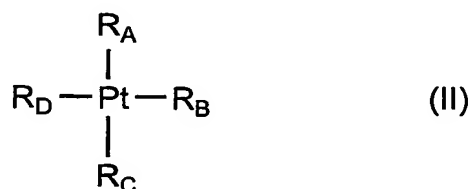
14. Use of a compound of formula (I) and a chemotherapeutic agent in the manufacture of a medicament for the treatment of cancer or a disease associated with antioxidant stress.

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15. A pharmaceutical agent comprising a compound of formula (I) and an anticancer agent.

5 16. A platinum-isoflavonoid complex or analogue thereof of the general formula (II):



in which

10 R_A , R_B , R_C , and R_D are independently halo, hydroxy, XR_E , alkoxy, $OC(O)R_F$, $OS(O)R_F$, thio, alkylthio, amino, alkylamino or dialkylamino,

X is O, NR_F or S, and

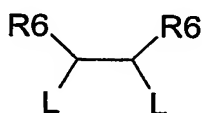
R_F is hydrogen, alkyl, arylalkyl, alkenyl, aryl or an amino acid,

wherein

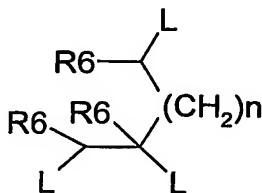
15 at least one of R_A , R_B , R_C , and R_D , and preferably only R_A , is XR_E where R_E is an isoflavonoid compound represented by general formula (I) set out above or is derived from or is a radical or ion of the isoflavonoid compound (I) and ligates to the platinum through any one or more of the heteroatoms X or a radical of the heteroatoms defined as part of R_E or alternatively by a double bond on the isoflavonoid compound (I)

20 and

when R_A is XR_E , R_B , R_C and/or R_D together may form part of a bidentate or tridentate ligand of general formulae (B) and (T) respectively



(B)



(T)

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wherein L represents a ligating atom chosen from N, O and S,

n is from 0 to 8, and

each R₆ is independently as defined above or may together form part of a cyclic alkyl,

5 aromatic or heteroaromatic structure,

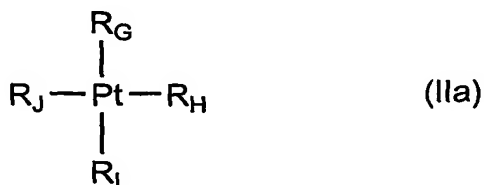
which platinum-isoflavonoid complexes include pharmaceutically acceptable salts thereof.

17. A method for the treatment, prophylaxis, amelioration, defence against, and/or
10 prevention of cell proliferation, cancer or a disease associated with oxidant stress which method comprises administering to a subject a therapeutically effective amount of one or more platinum-isoflavonoid complexes of the formula (II) as defined above.

18. Use of platinum isoflavonoid complexes of the formula (II) for the manufacture of
15 a medicament for the treatment, amelioration, defence against, prophylaxis and/or prevention of cell proliferation, cancer or a disease associated with oxidant stress.

19. A pharmaceutical composition comprising one or more platinum-isoflavonoid complexes of the formula (II) in association with one or more pharmaceutical carriers
20 and/or excipients.

20. A composition comprising a platinum complex of the general formula (IIa),



25

in which

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R_G , R_H , R_I , and R_J are independently halo, hydroxy, alkoxy, $OC(O)R_K$, $OS(O)R_K$, thio, alkylthio, amino, alkylamino or dialkylamino,

X is O, NR_K or S, and

R_K is hydrogen, alkyl, arylalkyl, alkenyl, aryl or an amino acid,

5 in association with an isoflavonoid compound of general formula (I) as defined in claim 1 and pharmaceutically acceptable salts thereof.

21. A method for the treatment, prophylaxis, amelioration, defence against, and/or prevention of cell proliferation, cancer or a disease associated with oxidant stress which
10 comprises administering to a subject a therapeutically effective amount of a composition of claim 20.

22. Use of a platinum complex of the formula (IIa) and an isoflavonoid compound of the formula (I) in the manufacture of a medicament for the treatment, amelioration,
15 defence against, prophylaxis and/or prevention of cell proliferation, cancer or a disease associated with oxidant stress.